REMARKS/ARGUMENTS

Claims 1-7 and 9-20 are pending in this application. By this Amendment, Applicants AMEND claims 1, 9, and 14 and CANCEL claim 8. The Examiner has withdrawn claims 5, 11, and 17-20 from consideration.

Claims 1-4, 6-10, 12, 14, and 16 were rejected under 35 U.S.C. § 102 (b) as being clearly anticipated by Takahashi et al. (U.S. 5,623,238). Applicants have canceled claim 8. Claims 13 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. Applicants respectfully traverse the rejections of claims 1-4, 6-10, and 12-16.

Claim 1 has been amended to recite:

"A dual mode band-pass filter comprising:
a dielectric substrate having first and second main surfaces;
a metallic film having an opening disposed on the first main surface of the dielectric substrate or inside of the dielectric substrate;
at least one ground electrode disposed on the second main surface of the dielectric substrate or inside of the dielectric substrate, so as to be opposed to the metallic film through a dielectric layer; and
a pair of input-output coupling circuits connected to different portions of the metallic film; wherein
the metallic film has a first resonance mode and a second resonance mode;
the first resonance mode is propagated substantially parallel to an imaginary straight line passing through connection points of the pair of input-output coupling circuits;
the second resonance mode is propagated substantially perpendicular to an imaginary straight line passing through connection points of the pair of input-output coupling circuits;
the first resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially parallel direction to the imaginary straight line;
the second resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially perpendicular direction to the imaginary straight lin ; and
the first and s cond res nance modes are coupled by the

opening of the metallic film." (emphasis added)

Applicants' claim 1 recites the features of "the first resonance mode is propagated substantially parallel to an imaginary straight line passing through connection points of the pair of input-output coupling circuits," "the second resonance mode is propagated substantially perpendicular to an imaginary straight line passing through connection points of the pair of input-output coupling circuits," "the first resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially parallel direction to the imaginary straight line," "the second resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially perpendicular direction to the imaginary straight line," and "the first and second resonance modes are coupled by the opening of the metallic film." With the improved features of claim 1, Applicants have been able to provide a miniaturized dual mode band-pass filter that has a greatly improved coupling degree that is easily adjusted and has a very high design flexibility (see, for example, the first full paragraph on page 5 of the Specification).

First, the Examiner has alleged in the paragraph bridging pages 2 and 3 of the outstanding Office Action that lines 57 and 58 of column 6 of Takahashi et al. teach that the two resonance modes are orthogonal. However, lines 57 and 58 of column 6 of Takahashi et al. states "because the microwave is initially circulated in the loop-shaped strip line as non-reflected waves, and the reflected waves shifted 90 degrees as compared with the non-reflected waves are again circulated in the loop-shaped strip line, two orthogonal modes formed of the non-reflected waves and the reflected waves independently coexist in the strip dual mode loop resonator." That is, Takahashi et al. uses the term orthogonal to mean that the **phase** of one mode is shifted 90° degrees with respect to the **phase** of the other mode, **NOT** that the two modes are **propagated** at 90° to ach other as recited in Applicants' claim 1. Furth r, Takahashi t al. teaches

in lines 41-43 of column 18 that "the microwaves transmit through the strip line **33** in **clockwise** and **counter-clockwise** directions ..." (emphasis added). Thus, Takahashi et al. merely teaches that the microwaves are transmitted in opposite directions around the stripline **33**, and certainly fails to teach or suggest the features of "the first resonance mode is propagated substantially parallel to an imaginary straight line passing through connection points of the pair of input-output coupling circuits" and "the second resonance mode is propagated substantially perpendicular to an imaginary straight line passing through connection points of the pair of input-output coupling circuits" as recited in Applicants' claim 1.

Second, Applicants have amended claim 1 to recite the features of "the first resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially parallel direction to the imaginary straight line" and "the second resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially perpendicular direction to the imaginary straight line." Takahashi et al. clearly teaches in **Fig. 3A** that the distance from point **A** to point **B** is one fourth (90°) of the resonator length. That is, Takahashi et al. teaches that the circumference of the loop **31** is the resonator length. Thus, at least, Takahashi et al. teaches **only** a single resonator length which defined as the circumstances of the loop **31** and clearly fails to teach or suggest **two different** resonator lengths. Therefore, Takahashi et al. clearly fails the features of "the first resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially parallel direction to the imaginary straight line" and "the second resonance mode has a $\lambda/2$ resonance in which the resonator length is defined by the length of the metallic film extending in the substantially perpendicular direction to the imaginary straight line" as recited in Applicants' claim 1.

Third, the Examiner has all ged in paragraph no. 6 on page 5 of the outstanding Office Action that "[t]he Takahashi [et al.] structure is the same as the presently claimed

invention, thus inherently the opening in the metallic film would result in some mode coupling in the same manner as the present invention." However, as noted in the previous Amendment, Takahashi et al. states in lines 19-21 of column 19 (cited by the Examiner in the outstanding Office Action and the previous Office Action) that "two orthogonal modes formed of the non-reflected waves and the reflected waves **INDEPENDENTLY** coexist" (emphasis added). It is beyond reason to conclude that the two resonance modes of Takahashi et al. are **both independent and coupled**.

Applicants agree with the Examiner that Takahashi et al. teaches in lines 14-24 of column 19 that the resonator **31** of **Fig. 3A functions** as a two-stage filter **in a similar manner** as the conventional resonator **21** of **Fig. 1**. The Examiner has alleged in paragraph no. 6 on page 5 of the outstanding Office Action that the stub **27** of the resonator **21** of Takahashi et al. inherently couples two resonance modes. Thus, the Examiner alleges that the resonator **31** of Takahashi et al. couple two resonance modes. However, as noted above, the Examiner has completely ignored the clear teaching of Takahashi et al. that the resonator **31** is structured so that the two resonance modes **independently coexist**.

Thus, contrary the Examiner's allegation, Takahashi et al. clearly fails to teach or suggest the feature of "the first and second resonance modes are coupled by the opening of the metallic film" as recited in Applicants' claim 1.

Fourth, the Examiner has alleged in the paragraph no. 6 on page 5 of the outstanding Office Action that the phrase "for coupling two resonance modes" is merely an intended use limitation. Applicants strongly disagree. The recitation "opening for coupling two resonance modes" recites definite structural features. However, in order to expedite prosecution, Applicants have amended claim 1 to more clearly recite this feature of the present invention.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(b) as being clearly anticipated by Takahashi et al.

Accordingly, Applicants respectfully submit that none of the prior art of record, applied alone or in combination, teaches or suggests the unique combination and arrangement of elements recited in claim 1 of the present application. Claims 2-4, 6, 7, 9, 10, and 12-16 depend upon claim 1 and are therefore allowable for at least the reasons that claim 1 is allowable. The Examiner has withdrawn claims 5, 11, and 17-20 from consideration. Applicants respectfully request the Examiner consider and allow claims 5, 11, and 17-20 upon finding that generic claim 1 is allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicants petition the Commissioner for a TWO-month extension of time, extending to October 27, 2003, the period for response to the Office Action dated May 27, 2003.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Date: October 21, 2003

Attorneys for Applicants

Joseph R. Keating
Registration No. 37,368

Christopher A. Bennett
Registration No. 46,710

KEATING & BENNETT LLP
10400 Eaton Place, Suite 312
Fairfax, VA 22030
Telephone: (703) 385-5200
Facsimile: (703) 385-5080